assist in removing accumulations of mucus, and to promote the flow of bile, where it is markedly diminished, two grammes (2) are given once daily and will not cause emesis unless the capsules are not properly coated, or unless the patient has an idiosyncrasy for the drug.

Where there is myocarditis with irregular heart action digitalis is indicated, Nephritis calls for diuretics such as calomel, diuretin, etc. Osteo-arthritis, most commonly of the spine, calls for mercurial inunctions and potassium iodide, with rest in bed with no pillow and with pads under cervical and lumbar spines to restore normal curvature. This complication is most annoying and many patients suffer constant pain, such as lumbago, sciatica, intercostal neuralgia, occipital headaches, and where there has been long-continued pressure on the nerves from osteo-arthritic deposits I have seen muscular atrophies. We have had several cases of asthma, due to pressure on the intercostal nerves by osteo-arthritic deposit in the dorsal spine, the asthma in these cases being of the inspiratory rather than the expiratory type; they have all recovered as the amebiasis improved.

The local treatment of amebiasis consists in high enemas, given in the knee chest position, beginning with a 1-8000 solution of quinin bisulphate and increasing gradually to 1-500, giving as much of the solution as the patient can retain. It should be held as long as possible. Enemas of the silver salts, thymol, potassium permanganate, etc., have been tried.

In cases where there is great and constant pain, gas formation, and where the bowel can be palpated and is distinctly thickened, an artificial anus should be made by bringing up a loop of ileum close to the ileo-cecal valve. This allows of irrigation of both large and small intestines, and places the large intestine, which is approaching gangrene, at rest.

This operation has been recently performed three times, twice by Dr. C. G. Levison of this city, and once by Acting Assistant Surgeon Alanson Weeks. All three cases were in a very grave condition prior to the operation. One is now up and about and back to normal weight, one other will probably die of a nephritis, his amebic condition is much improved and pain is gone, the third patient is improving also but was operated only a few days ago, hence no conclusion can be drawn as yet. The prognosis of amebiasis is good as far as saving life is concerned, unless there is abscess of the liver or an extensive ulcerative or gangrenous colitis; the prospect of complete cure is very bad, as the present methods of treatment do not seem to be adequate,—the patient recovers from the attack but the amebæ persist in the bowel for a long time, and relapse is frequent.

Conclusions.

(1.) Amebiasis is endemic in California and is disseminated by means of water and vegetables such as watercress, strawberries, celery, cabbage and lettuce, these substances being infected by the practice of sprinkling human fecal matter over vegetables and the soil for purposes of fertilization.

(2.) Amebiasis is a serious disease, the tendency of which is to become chronic and produce secondary complications such as diarrhoea, constipation, abscess of the liver, hepatitis, nephritis, myocarditis and osteo-arthritis.

(3.) The disease is difficult of diagnosis by ordinary methods, for the reason that the secondary complications are often so manifest as to overshadow the original disease, and further, even where the disease is suspected, it cannot be confirmed without careful and repeated examinations of a liquid stool produced by a saline, until living, motile amebae are found.

(4.) The treatment while adequate to save life, in the majority of cases, is inadequate to effect a permanent cure.

CESAREAN SECTION WITH REPORT OF NINE CASES. *

By ALFRED BAKER SPALDING, M. D., San Francisco.

Although many leading obstetricians have sounded warnings lest we forget those time-honored and supposedly more conservative obstetrical procedures that have served women for generations in their hour of difficult labor, the spirit of surgical aggressiveness of the past twenty years has carried all before it, so that at the present moment it is difficult to discuss accurately the relative value of the operation of Cesarean section on the one hand and the operations of high forceps, version, pubiotomy and induction of premature labor on the other. It is so much a problem of personal experience and the application of principles which vary widely with each individual case that it is almost impossible to judge the operation per se. The statistics which have been compiled in relation to the mortality and morbidity following Cesarean section must be carefuly studied in order to be understood. There is a certain mortality and morbidity after spontaneous labor that can not be avoided and the conditions which call for Cesarean section of necessity carry a much higher mortality and morbidity. In judging of the value of the operation therefore for any particular case, one must know the unavoidable mortality and morbidity of spontaneous labor, the mortality and morbidity of the particular abnormal labor under consideration when untreated and the mortality and morbidity of the condition when treated by all the various obstetrical procedures, including Cesarean section.

Several obstetrical surgeons have performed this operation a large number of times with a maternal mortality of less than 5%. Richardson, of Boston, after compiling carefully the experiences of many of our best operators, places a mortality of 5% for the conservative operation when performed before the onset of labor, but this increases rapidly when performed late in labor to 12% and 50%, according to the amount of exhaustion induced and the presence or absence of a beginning uterine infection. In ideal cases there should be no fetal mortality or morbidity. Operating without trained assistants and amid surroundings that are not ideal gives to the operation, however, a much higher ma-

* Read before the California Academy of Medicine, September 28, 1909.

ternal and fetal mortality. Moreover, it is not the operation itself that presents the greatest difficulties but the judgment needed to decide in each individual case the need for the operation.

Because the process of childbirth is deemed by so many to be a natural procedure and because in such a large percentage of cases nature is able to manage the confinement unaided the profession in general and the laity in particular are loth to encourage in a pregnant woman, that study and attention which is demanded of all other classes of practice; and the laity at times even resent as unnecessary interference the needful prophylactic examinations. It is only by carefully and completely examining every obstetrical patient that we can classify or pick out the patient who will need a Cesarean section. For illustration, I find, after reviewing the records of 900 private and clinic patients, that there is noted among the clinic patients a percentage of 8% of contracted pelvis and in private and hospital cases a percentage of 11 2-3% In other words, the idea that here in California patients with contracted pelves are a rarity is erroneous; the idea has gained ground because no one has made systematic examinations.

Again, for illustration, of thirty cases of contracted pelvis met with in the first 200 confinements in the University of California Hospital, 18, or 60%, had either a normal spontaneous labor or were delivered by low forceps with no maternal and only one fetal death due to prematurity. Of the remaining thirteen, however, there was one difficult breech extraction, 4 mid forceps, 4 high forceps, 1 induced labor and 2 Cesarean sections with a loss of 3 babies and one with serious head injury. The case of induced labor and two of the four cases of high forceps ended in death to the baby, while one baby delivered by high forceps was seriously injured. The loss of these infants was a sacrifice to obstetrical misjudgment as the babies saved by Cesarean section are a triumph for correct obstetrics.

At the present time the chief indication for the operation of Cesarean section is found in those cases of pelvic disproportion where the probability of a forcible extraction ending in death or cerebral damage to the child is imminent or where the mother is liable to serious injury or possible death by such forcible vaginal procedure. The day for craniotomy on a live child is over and symphysiotomy has almost ceased to be considered while the operation of high forceps, version and induced labor in cases of contracted pelvis are giving way more and more to Cesarean section in properly selected cases. The only operation at present that seems to meet with a growing favor is pubiotomy combined with forceps or version. Certain cases of placenta previa are by many surgeons treated by abdominal Cesarean section, although in general this method of treatment is still condemned by many obstetric surgeons. Personally, my experience has been such as to favor the operation in cases of complete placenta previa at or near term where the cervix is undilated, the mother and child in good condition and suitable surroundings and a skilled operator at hand. The operation is also indicated in some cases of eclampsia, although probably better results can be had with the vaginal operation. Prolapse of the cord in cases of moderate pelvic contraction might also give indication for the operation as in fact any serious complication blocking labor when the life of the child is in danger.

In my series of cases I operated once for a large hematoma obstructing the pelvis for the following reasons: the hematoma was so extensive that all the vulvar and perineal region was in a condition of oedema from extreme pressure; in addition the fetal heart was 90, the patient was in a good hospital and facilities were present for handling successfully a Cesarean section. The mother and baby both lived, and the genital tract did not become infected, although the cavity of the hematoma became septic and in part necrotic. Succeeding the delivery by Cesarean section the hematoma was opened and packed with camphor phenol gauze and remained isolated from the peritoneum.

Operations more or less intricate have been devised for the extra peritoneal operation of Cesarean section in cases complicated by sepsis, although many operators still prefer in such condition the Poro operation of hysterectomy and when possible deliver per vaginam, even at very great risk to the child.

I desire to present to the Society my experience with nine cases of Cesarean section, five of which were operated upon by me and four seen in consultation. I present the report because in each case some obstetrical procedure such as premature labor, version, high forceps and pubiotomy or Cesarean section was necessary and these particular labors I believe would have terminated fatally for many of the babies and possibly some of the mothers had not Cesarean section been the operation of choice.

In this series all the mothers are alive and uninjured and all the babies are alive but one who was so toxic and immature from a complicating maternal endocarditis and nephritis that the operation can hardly be blamed for the loss.

Case 1—Primipara, 18 years of age, single.—Tuberculosis of the left hip when 2 years old; joint resected at that time; pelvis coxalgic; true conjugate 8 centimeters. Labor due November 1, 1905. Operation at Lane Hospital before the beginning of labor pains on November 13, 1905. The cervix was dilated to about 3 centimeters followed by Cesarean section and excision of the uterine ends of the tubes to cause sterility. Boy baby delivered in good condition weighing 8 pounds; biparietal diameter 9 centimeters. Patient suffered after the operation with an acute tubercular pneumonia but recovered and left the hospital with the baby one month later. Tubercle bacilli were found in the sputum.

Case 2—Primipara, 35 years old.—Dislocation of the right hip when five years old. Has not been able to use right leg since; leg shortened about 3″. True conjugate 9 centimeters; over right sacro iliac synchondrosis is a projection of about ¾″ obliquely contracting the pelvis; external measurements of the pelvis normal except for evidences of rachitis. Patient was married a number of years and was very desirous of having a child. Labor

due December 30, 1907. Labor pains started at 11 p. m. December 30. Operation performed at the University of California Hospital, 11:30 a. m., December 31. Although the pains had been strong there was no indication that the head would enter the pelvic brim. On opening the uterus a most profuse hemorrhage occurred from incision through the placenta site. Female child in good condition weighing 7 pounds 10 ounces was delivered. The mother suffered afterwards with a stitch abscess from which a pure culture of diplococci was obtained. Before the wound closed a Pagenstacher stitch was discharged per vaginam. Patient with baby in good condition was discharged from the hospital in February, 1908.

Case 3—Primipara, 20 years of age, single. Pelvis simple flat, promontory easily felt; true conjugate 8 centimeters. On March 23 unsuccessful attempt was made to force the head of the child into brim of the pelvis by suprapubic pressure. Labor pains began March 26, 1908, and were regular but poor in character. On March 31 the cervix had dilated only to 3 centimeters, the head was partly in the brim, the pains were still irregular. On April 2 the pains were hard but regular. On April 5, 11 p. m., pains became regular and very hard, at 6:30 a. m. the position had changed to a breech which was now felt high above the brim. At 11:30 a. m. the breech was still above the brim, cervix dilated 9½ centimeters, membranes unruptured. Mother and baby were in good condition and it was judged safest to deliver by Cesarean section. I did not see the patient until the morning of April 6, although I had previously carefully measured the pelvis and classified the patient as a probable case for Cesarean section. Operation at the University of California Hospital. Hemorrhage very slight. There was considerable difficulty in reviving the child due to an excess of anesthesia, otherwise both mother and child had an uneventful recovery.

Case 4—Consultation May 25, 1908.—Primipara, age 30. Normal pelvis. Sudden profuse hemorrhage with first labor pain. On vaginal examination cervix was found thick, 2 centimeters dilated with the placenta overlying the internal os. Mother and baby were in good condition and in a suitable hospital. Operation was advised and immediately performed by Dr. Florence Ward. Girl baby in good condition was delivered and recovery for both was uneventful. In this patient seven years previously one ovary and tube had been removed and the uterus stitched to the abdominal wall. At the time of operation there was no evidence of the previous hysteropexy.

Case 5—Consultation October, 17, 1908. Threepara.—First labor lasted several days and was terminated with forceps; the baby stillborn. Second labor lasted thirty-six hours; terminated with forceps; baby injured so that it died several weeks after delivery. Pelvis justominor flat, true conjugate between 7½ and 8 centimeters. Recommended that Cesarean section be performed about November 7. On Novmber 9 Dr. Somers operated. Girl baby weighing 7 pounds, 10 ounces was delivered in good condition, biparietal diameter 10 centimeters. Mother and baby recovered.

Case 6—Consultation October 26, 1908. Threepara.—First labor lasted three days, terminated by forceps and embryotomy, perineum lacerated into the rectum. Second labor premature at the seventh month lasted 36 hours, terminated by forceps, baby stillborn. Patient in labor at the present time; child lying transversely; membranes unruptured; pelvis simple flat type; true conjugate 7 centimeters. Immediate operation advised. Operation by Dr. Wakefield. Profuse hemorrhage, from incision through placenta site. Girl baby delivered in good condition, both recovered without complications.

Case 7—Primipara.—Eighteen years of age. Patient attended in labor from Dispensary of the San Francisco maternity by Drs. Wrenn and Mahon. Labor progressed normally until head appeared on the perineum. This was at 11 a. m. Then a small tumor which was thought to be a hernia appeared in the left labia. This rapidly enlarged involving the vulva and perineum and causing the child's head to recede to the pelvic brim. Patient was etherized and hurried to the University of California Hospital where I first saw her. Operation March 29, 1909. Both mother and baby were in poor condition at the time of operation, maternal pulse 130, fetal heart 90. After a rapid abdominal extraction the pelvic hematoma was incised, clots removed and cavity packed with camphor phenol gauze. The baby was with great difficulty revived but was discharged with the mother in good condition on April 26.

Case 8—Primipara, 24 years old.—Pelvis was rachatic, justominor, kypho-scoliotic. True conjugate less than 8 centimeters. Chronic nephritis and chronic endocarditis, (aortic stenosis). Labor due June 20, 1909. On June 20, after ten and a half hours labor pains without engagement of presenting part, an immature baby was delivered alive by Cesarean section. Biparietal diameter 8 centimeters. The baby died about one-half hour after birth of respiratory failure. Mother recovered without complication and discharged July 16.

Case 9—Consultation, July 13, 1909. Primipara, 35 years of age.—Patient in labor. Two weeks previously had had sharp hemorrhage which had returned with the onset of labor pains much more severely. On examination the placenta was found covering the cervix completely, which was about 2 centimeters dilated. The fetal heart was 144, strong. The mother's pulse 72. Patient in a hospital and in good condition. Advised immediate Cesarean section. Operation by Dr. Florence Ward. Considerable hemorrhage from placenta site, which was easily controlled. Placenta was adherent to lower uterine segment lying over the cervix. Baby deeply asphyxiated but revived in about 25 minutes with hot and cold baths. Mother and baby recovered without complications.

From these experiences and from a review of the recent literature it appears to me that the field for the operation is a larger one than is at present acknowledged. The operation will without doubt in the future, as possibly it has in the past, be performed in inappropriate cases and will when attempted without due care and suitable assistants fail to attain the best results. I believe a fair test of labor in most primiparae is necessary and without harm if sepsis and pelvic injury be avoided. It is important that the time of anesthesia be short because of the effect on the child. This calls for a skilled anesthetist as well as a rapid operator and careful repair must be instituted to avoid the danger of future uterine rupture. In addition the child when delivered must be entrusted to a skilled assistant or else the very object for which the operation is performed will in some cases be defeated.

Discussion.

Dr. W. Francis B. Wakefield: I think with Dr. Spalding that the field for Cesarean section will gradually increase as we habitually study our cases more carefully. I believe that every one doing obstetrics should study each individual case carefully, measuring each pelvis accurately, determining its relation to the size of the foetal head and pelvic inlet, and if this is done I believe we will arrive at very definite conclusions and be able to perform

Cesarean sections with definite indications. I believe that Cesarean section should always be performed where we have a true conjugate of from 7½ to 8 cm., 7½ in the simple contracted and .8 in the general contracted pelvis. It is not in these cases that our difficulty arises however, it is in the cases that are just a little larger, perhaps 8½ cm., and where we have relative disproportion between the head and pelvis. Then we have to decide between one of several maneuvers. One would be to induce premature labor; another, Cesarean section after a test of labor; another, extract the child by means of high forceps; and another, to perform pubiotomy, with or without mechanical assistance. It seems to me that the decision between these will depend upon a great many factors. In the first place, I do not believe that everybody should do Cesarean sections. I believe that if the case is in the hands of a man who is skilled in abdominal surgery, or if such a man can be brought into the case to do the Cesarean section, then Cesarean section is the operation of choice after a fair test of labor. On the other hand, if the condition of the patient is such that abdominal operation would not be advisable under ordinary circumstances, then, it seems to me, after a fair test of labor, that pubiotomy assisted by forceps would be the operation of choice. I believe that pubiotomy has come to stay. I believe that it is a relatively simple operation; that, as we perform it more frequently, we will find its technic simplified, and that it adds very little to the mother's general risk and undoubtedly gives a better opportunity to save the lives of many children that would otherwise be lost. Personally I would prefer Cesarean section to pubiotomy but I believe that under most circumstances, in the hands of the general surgeon and in country practice and where it is not possible to get the patient into the environment for laparotomy, that pubiotomy is going to open up an important field. I believe that the increased mortality that has been accrued from Cesarean section has been more from sepsis than from exhaustion. Where we have a pelvis partially contracted the technic should be scrupulously carried out during examinations, etc., in order that no infection shall have entered the uterus. Usually when we go to these cases Cesarean section has not been suggested to the minds of the accoucheur and the examinations have been made frequently and oftentimes under not very exact sepsis and the result is that more or less infection has gotten into the vaginal vault. I repeat that the majority of these cases die from sepsis rather than exhaustion which makes these late Cesarean operations have such a large mortality.

Dr. A. B. Spalding: I have never done a pubiotomy for the reason that the Cesarean section patient seems to me to have a less complicated recovery ahead of her. It is stated that there is no great danger from the pubiotomy. You simply take a long, specially curved needle, pass it close to the posterior surface of the pubic bone from about the spine to the pubes down and out to the middle of the labia majora. The urethra is pulled to the other side by an assistant. Then with a chainsaw the bone is rapidly severed, the pelvis opens. It separates for 5 cm. and allows a forceps delivery or version. In Dr. Williams' series of cases nearly every case reported was more or less severely lacerated and in one case the bladder was injured, which you should not get in a Cesarean section. They used to bandage the patients and put them in tight jackets, but that is not done any more. The patients seem to be benefited when there is not a too tight union of the symphysis because of the soft cartilagenous union making subsequent delivery of the head easier. This operation is easier than a Cesarean but the result to my mind is not so perfect. It has, however, a field distinct from Cesarean section, namely, when the contraction of the pelvis is at the outlet in place of at the brim as in a funnel-shape pelvis.

GUNSHOT WOUND OF THE HEART WITH RECOVERY.*

By C. J. TEASS, M. D., Kennett.

The first successful operation for relief following a gunshot wound of the heart was performed in *1897 by A. G. Podres,* who on the second day made a skin and bone flap containing the left lower portion of the sternum as well as the cartilages of the third, fourth, fifth and sixth ribs and having a lateral base. Upon opening the pericardium it was seen that the wound of the right ventricle, about one cm. long, had become closed; so he did not attempt to suture it, but did make more than ten punctures with a needle, hoping to locate the bullet in the heart wall, but as this was without avail, the heart was taken up and carefully palpated with the hands, but no bullet was found. When last heard from the patient's condition continued to be excellent.

But as far back as *1815* we have the autopsy findings by *"Latour"* of a soldier who was shot several years previously and had died from another disease. At autopsy bullet was found encapsulated in right ventricle near apex, partly covered by pericardium and partly resting on septum medium.

Again in *1849 H. Suckow* found bullet in right ventricle cavity many years after the wound was inflicted.

And again in *1861 G. B. Balch* reported a case in which a bullet remained twenty years in the wall of the right ventricle.

A few more interesting cases could be reported with which I will not take up your time. Suffice it to say that it seems rather strange to us at this hour of surgical progress that such a master surgeon of his day as Billroth should sound the warning: "Let no man who hopes to retain the respect of his medical brethren dare to operate on the human heart." For we naturally think in attempting to look back some twenty years that so bold an operator would have taken cognizance of such autopsy findings which were quite sufficient to definitely establish the important fact that the heart muscle could be quite severely damaged without a necessarily fatal issue, and that he would have dared to venture where others might follow for the relief of direct injury to the heart muscle. From a diligent search of the literature I have been able to gather thirteen authenticated cases (exclusive of my own) of gunshot wounds of the heart with recovery following an operation for their relief, and with the exception of the one already referred to by Podres in 1897, they all are of recent record, beginning in *1902 when Launay* resected costal cartilages of fourth, fifth and sixth ribs and sutured anterior wound of left ventricle 2 cm. from apex. The wound of exit was sutured with great difficulty, after which all hemorrhage ceased. After cleansing pericardium drain

* Read before the Pacific Association of Railway Surgeons, San Francisco, August, 1909.